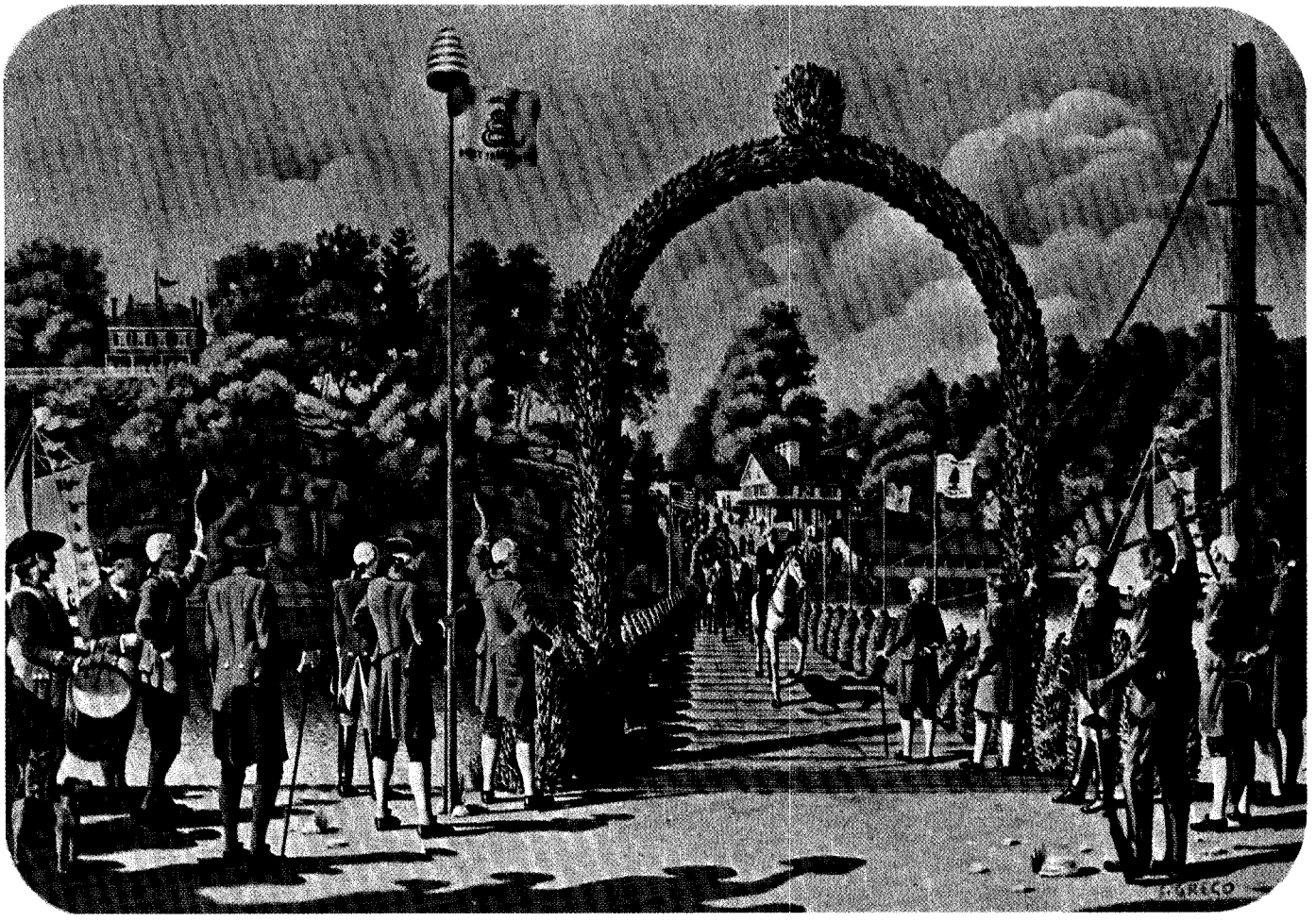


President-elect Washington crosses Floating Bridge (Gray's Ferry) on Inaugural journey to Philadelphia, 20 April 1789.
—Free Library of Philadelphia

In November 1783, at war's end, the Corps of Engineers was disbanded, not to be re-established until 1789 and the inauguration of the new constitution. In that year, a plan submitted to the President by the Secretary of War, Henry Knox, for the reorganization of the nation's military forces recommended, as part of the military establishment of the United States, a "*small corps of well-disciplined and well-informed artillerists and engineers.*"

Under pressure of deteriorating relations between this country and the principal European powers, Congress, on 20 March 1794, authorized the President to fortify certain harbors along the coast, and the next day appropriated funds for the undertaking. As there were no engineers in the Army to carry out these works, the President directed the temporary appointment of a number of engineers to design and superintend construction, dividing the coast up into districts, and appointing one or more engineers for each.

The officers appointed were foreign-born, including a number who had also served in the Corps of Engineers during the Revolution.

Those appointed included:
Stephen Rochefontaine,
(New England)
Charles Vincent,
(New York)
John Jacob Ulrich Rivardi,
(Baltimore-Norfolk)
John Vermonet,
(Annapolis-Alexandria)
Nicholas Francis Martinon,
(South Carolina)
Paul Hyacinte Perrault,
(South Carolina—Georgia)
Peter Charles L'Enfant,
(Philadelphia—Wilmington)

Henry Knox, 1750-1806. American General in the Revolutionary War. Knox served as Secretary of War under the Articles of Confederation, 1785-89, and as Washington's first Secretary of War under the Constitution 1789-94. By James B. Sword, after an original by Charles Wilson Peale.

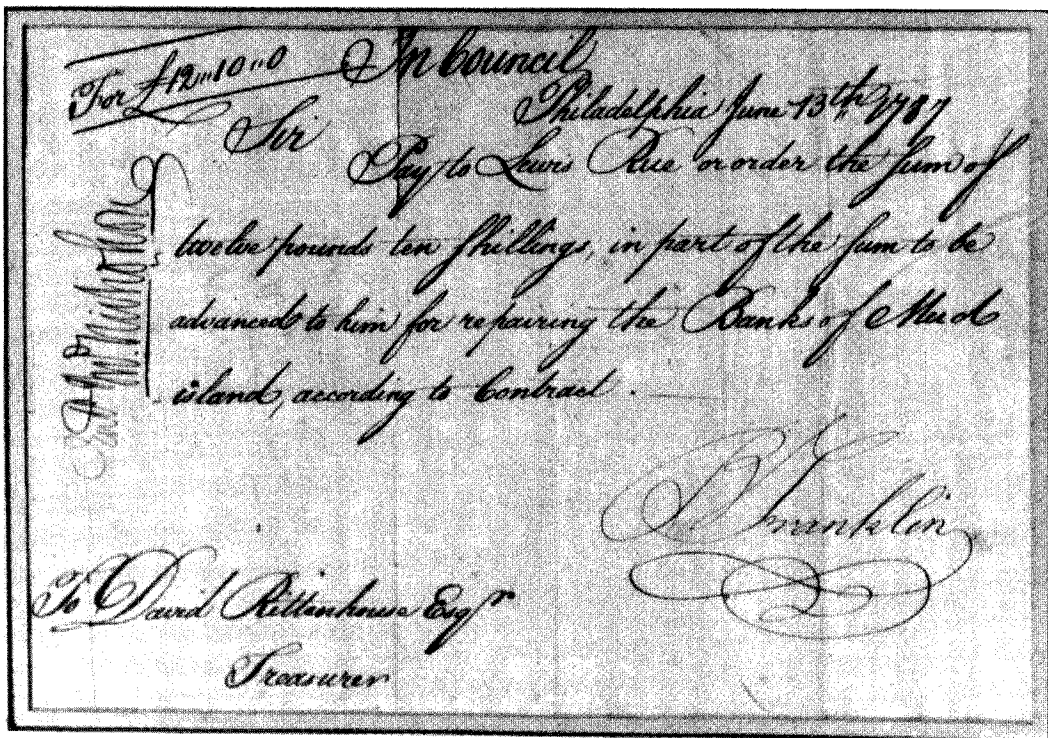
—Historical Society of Pennsylvania

Pierre Charles L'Enfant, 1754-1825. French Army Engineer and Architect and Officer in the American Revolutionary Army. L'Enfant designed the new Federal City of Washington in 1791. In 1794 he was given the mission of fortifying the Delaware River Ports.

—National Archives

In the 1780's, the City Councils of Philadelphia contributed to the maintenance of Fort Mifflin and other area defenses, as can be attested by this voucher, signed by Benjamin Franklin on 13 June 1787, authorizing the City Treasurer to advance £12,2s. to Lewis Rice as partial payment for work done to "the Banks of Mud Island."

—Atwater Kent Museum, Philadelphia


In Council
Philadelphia June 13th 1787
For £12.10.0
Sir
Pay to Lewis Rice or order the Sum of
twelve pounds ten shillings, in part of the Sum to be
advanced to him for repairing the Banks of Mud
Island, according to Contract.
B. Franklin
To David Rittenhouse Esqr
Treasurer

All were appointed between 25 March and 12 May 1794.[10] L'Enfant, one of the French engineer officers who had served under du Portail, had chosen to settle here after the war. In 1789 he had been made Engineer of the United States. In 1791 Washington invited him to design the new capital city, a project he worked on through early 1792, when conflict with the Commission of Buildings and Grounds and intense political pressure forced the President to remove him.

Thus, in 1794 he returned to Philadelphia to rebuild the old defenses at Fort Mifflin and to explore the defensive possibilities of the lower Delaware, with a view toward protecting Wilmington's approaches. Secretary of War Knox authorized L'Enfant to rebuild the fort again as an earthwork—"*the parapets of the work to be erected are in general to be of earth, or where that cannot be obtained of an adhesive quality, the parapets may be faced with timber and filled in with earth.*" For this, Congress appropriated $11,913.82, which sum L'Enfant was cautioned not to exceed.

L'Enfant replied that the proposed works at Mud Island were insufficient for a proper defense of the city. Moreover, "*its situation is altogether so ill judged as to be enfiladed from every point from whence an attack is the most likely.*" L'Enfant proceeded with the work, but by September had exhausted his alloted monies, and had resorted to soliciting six thousand dollars in funds from the Pennsylvania Legislature, which in the following year ceded the property to the United States. He managed to explore the defensive possibilities of the lower reaches of the Delaware, specifically at Pea Patch Island, where Fort Delaware was eventually to rise. He noted the advantageous situation of the island, the spelling of which he phoneticized as *Pip Ash*—

> *Upon the Pip Ash Island, it cannot be questioned but that pass may be well armed, and that proper works erected there would protect the whole river bank.*
>
> *The perfect security which the protection of that pass would ensure to the whole river, and to the several harbor towns on its shore, being an object fully to compensate the expense of erecting proper works on it, although the means at present inadequate, as they are, to the accomplishment of those temporary works, determined upon, cannot indulge me in the idea that these shall be undertaken at present. I could not but wish to ascertain myself the propriety of that situation, of an importance, in my opinion, not to be lost sight of, when the means of the country will render the undertaking practicable.*[11]

By 1795 the project at Mifflin was completed, but interest soon lagged again, and the earthworks were allowed to deteriorate.

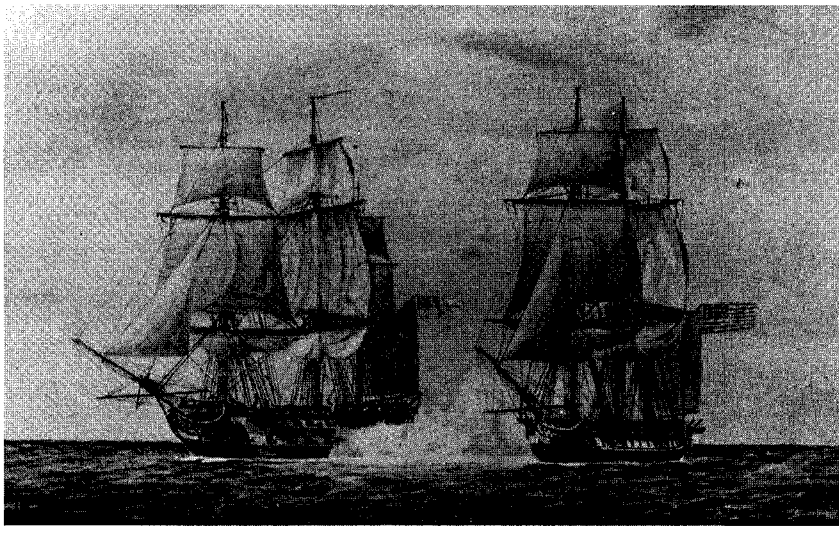
In 1798, the alarm was raised again. War with France threatened, and Congress appropriated $250,000 for a new series of permanent masonry fortifications to replace the old earthen palisades.

The new Fort Mifflin was built between 1798 and 1803, as a masonry work combining both star-fort and bastion designs, mounting twenty-nine guns and a detached eight gun water battery. In the course of construction,

Aerial view of Old Fort Mifflin, Philadelphia.

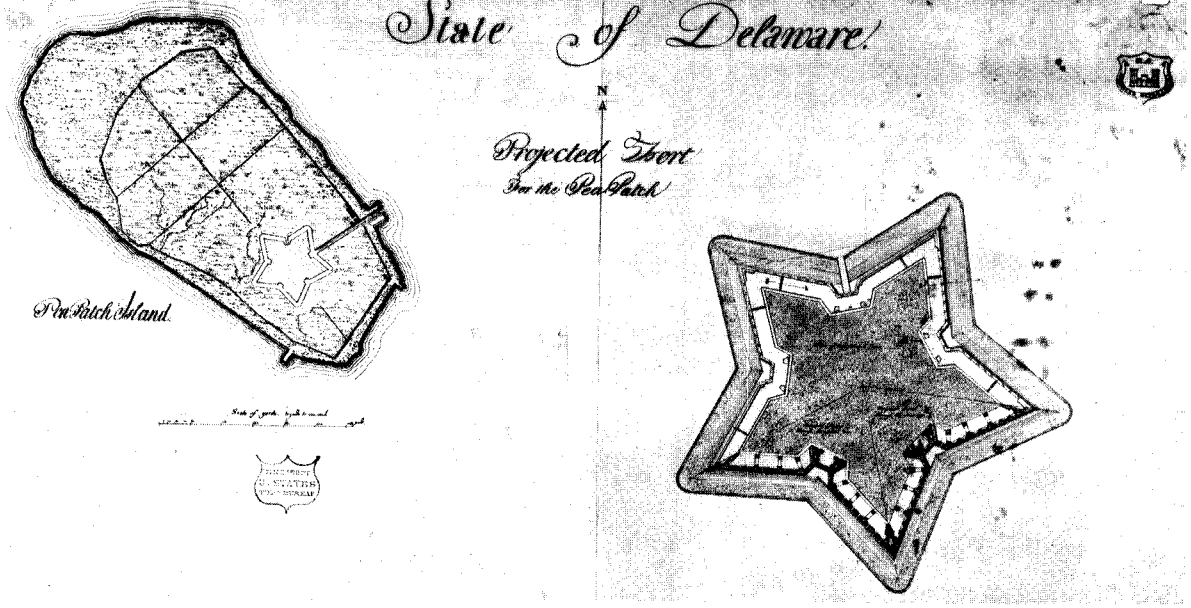
$64,361.09 were spent on the works, with the United States disbursing a total of $171,984.37 to fortify the Delaware during that time period. The work was extensively repaired in 1808-1809 and was used intermittently through the Civil War, when it became a rather infamous prison camp for Confederate soldiers, as dank if not as genocidally lethal as its successor, Fort Delaware. The 1808-1809 modifications were undertaken under the threat of a second war with Great Britain, arising out of the Chesapeake incident of 1807.[12] From November 1807 to the outbreak of the War of 1812 over three million dollars were appropriated for new construction. This construction is noteworthy as the first major project designed and implemented by engineers of American birth and education.

On 6 March 1802, Congress had authorized the formation of a permanent Corps of Engineers, with an engineer school to be established at West Point. Major Jonathan Williams, current inspector of fortifications, was appointed Chief Engineer and the academy's first superintendent. The founding of a permanent Corps was to profoundly influence military construction in the Philadelphia area, providing a continuing supply of engineer officers to direct future fortification projects—the chief proposal being the projected fort on Pea Patch Island. Congressional documents as early as 1800 suggest the desirability of such a facility and by 1819 the construction of a masonry star-fort built on pilings driven into the Delaware mud was well underway, under the direction of Major Samuel Babcock, who supervised the work from 1815 to 1824, replacing an earthwork



H.M.S. Leopard attempting to board and search U.S.S. Chesapeake, June 1807. Watercolor attributed to Warren.
On 21 June 1807, the Frigate U.S.S. Chesapeake, Captain Charles Gordon, bearing the broad pennant of Commodore James Barron, encountered H.M.S. Leopard, Captain Humphries commanding off Cape Henry. After a broadside exchange, Chesapeake hauled down her colours and submitted to the British search.

—Mariners Museum, Newport News, Virginia



Samuel Babcock's "Star Fort" on the Pea Patch, 1815-1824. —National Archives

hastily erected in 1814, to blunt an expected British drive up the Delaware. However, there was considerable subsidence and evidence of deviation from the original plans, for which Babcock was brought before a general court-martial in 1824 (May-September). Although acquitted, the court determining him guilty of errors in judgment rather than intent, a glance at the trial transcript suggests that Babcock may have been indicted to prevent the implication of higher authorities in the scandal. He consistently maintained that his deviations from original plans had not only been authorized but had actually been proposed by Lieutenant Colonel Joseph Totten, a power in the Corps and its future chief for over twenty-six years. The court ruled that most of Babcock's documentation was inadmissable and refused to comment on the allegations.[13]

In 1831 the fort burned down; reconstruction commenced in 1833 under the command of Major Richard Delafield, an undertaking rather fully covered in an earlier chapter, "Rebuilding Fort Delaware."

The Trenton Coastwise Travel Bridge over the Delaware. Erected in 1804-1806 by Theodore Burr, the Bridge provided an effective response to the British blockade of the Lower Delaware and other Atlantic Harbors during the War of 1812.

—Free Library of Philadelphia

Admiral Sir John Poo Beresford. By Sir William Beechey.
—The British Museum

THE WAR OF 1812

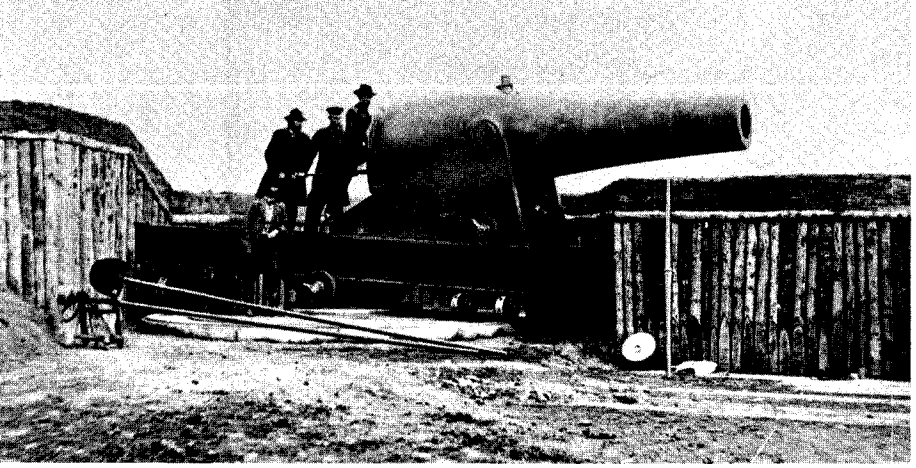
A declaration of war against Great Britian on 15 June 1812 caught the Philadelphia area unawares. A British Order in Council, issued on 26 December 1812, and declaring the Chesapeake and Delaware Bays to be in a state of rigorous blockade, sent a flurry of invasion fever throughout the region. In 1813, Delaware ceded the Pea Patch to the Federal Government with an injunction to begin the oft-recommended fortifications as quickly as possible. By the spring of 1813, a British squadron under the command of Sir John P. Beresford had effectively blockaded the mouth of the Delaware and was threatening to burn Lewes unless the inhabitants ransomed the town for *"twenty live bullocks with a proportionate amount of vegetables and hay."* The people refused; the bombardment commenced; guns and militia were rushed from Philadelphia and Wilmington, and batteries erected to fight off the attack.

Philadelphia, meanwhile, was all but unprotected. Fort Mifflin had a garrison of fourteen invalided soldiers and the City Councils did little to correct the situation. The British squadron roamed the Delaware, looting and burning settlements and ships as far north as Reedy Island. The Upper Delaware was defended by a flotilla of ninteen gunboats, sixteen barges, and two block sloops, which did manage to frighten off the British frigate *Belvidera*, when she attempted to run through their fire.[14]

On 25 August 1814 news of the British capture and burning of Washington threw the city into a panic of activity.

Fortifications and redoubts were proposed for Gray's Ferry, the West Bank of the

Blockade of the Delaware by H.M.S. Belvidera, Admiral Sir John Beresford commanding, War of 1812.
—New York Historical Society



Fifteen-inch Rodman gun. T. J. Rodman's smoothbore cannon, with a tapering barrel designed to follow the pressure curve, was cast on a hollow core, and cooled from the inside out, greatly increasing the strength of the metal. Before the Civil War, this revolutionary weapon was the most powerful gun in the American arsenal.

—National Archives

Schuylkill, at Hamilton's Grove, the Lancaster road and at Fairmount. Between 3 September and 1 October, a citizen levy of 15,000 volunteers worked feverishly to throw up earthworks, each man giving one day's labor. Fortunately, the British were turned back at Baltimore, and Philadelphia's citizen engineers were happily deprived of an opportunity to test their defenses in battle.[15]

The years between the War of 1812 and the Civil War were marked by considerable advances in ordnance development, the old twenty-four pounder sea-coast defense guns eventually being replaced by weapons as large as the massive new fifteen-inch Rodman guns. In new brick and stone forts which arose in the period, these were mounted in casemates or armored compartments within the walls, and fired through embrasures in the masonry rather than sitting atop the walls *en barbette* as had previously been the case. This shift in the method of mounting armaments necessitated the strengthening of the defenses' stonework, to support the large masses of cannon now contemplated. The history of military construction in the Philadelphia area during that period is congruent with the reconstruction of Fort Delaware, first under Delafield and later under Sanders, and the intermittent repair work done to Fort Mifflin. The Mexican War (April 1846-September 1847), when it came, was very much a foreign affair, drawing Engineer Officers away from the Northeast (and the Philadelphia area) to combat service in the field. Fort Delaware grew slowly, dependent as it was on annual Congressional appropriations and the general neglect of military facilities normal during periods of relative peace.

Officer of Engineers, 1846.

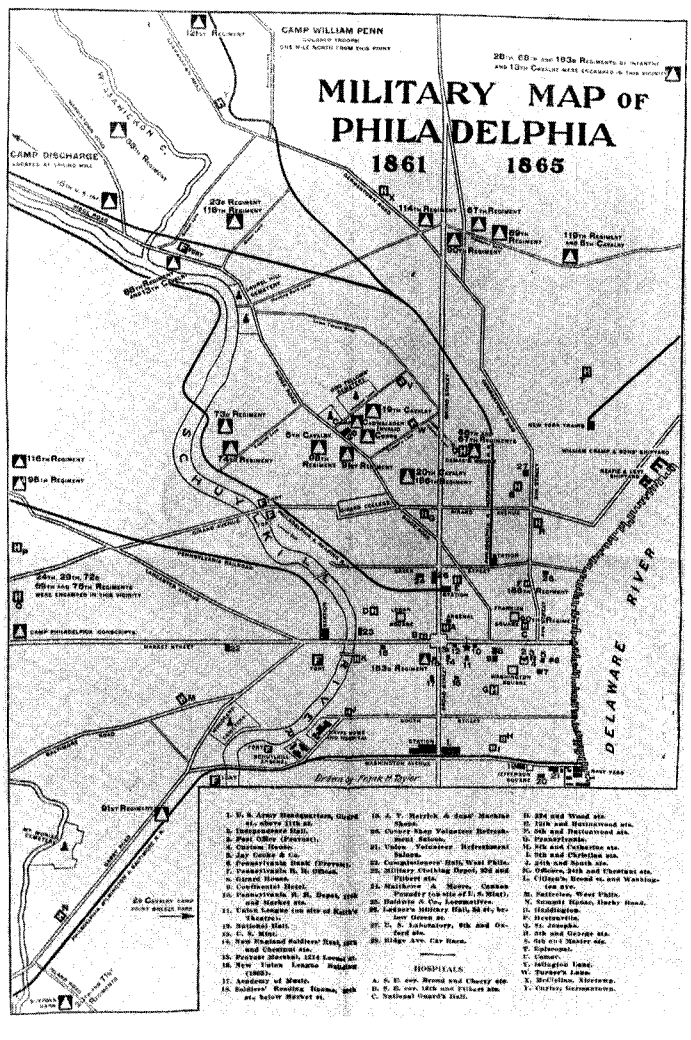
—National Archives

THE CIVIL WAR

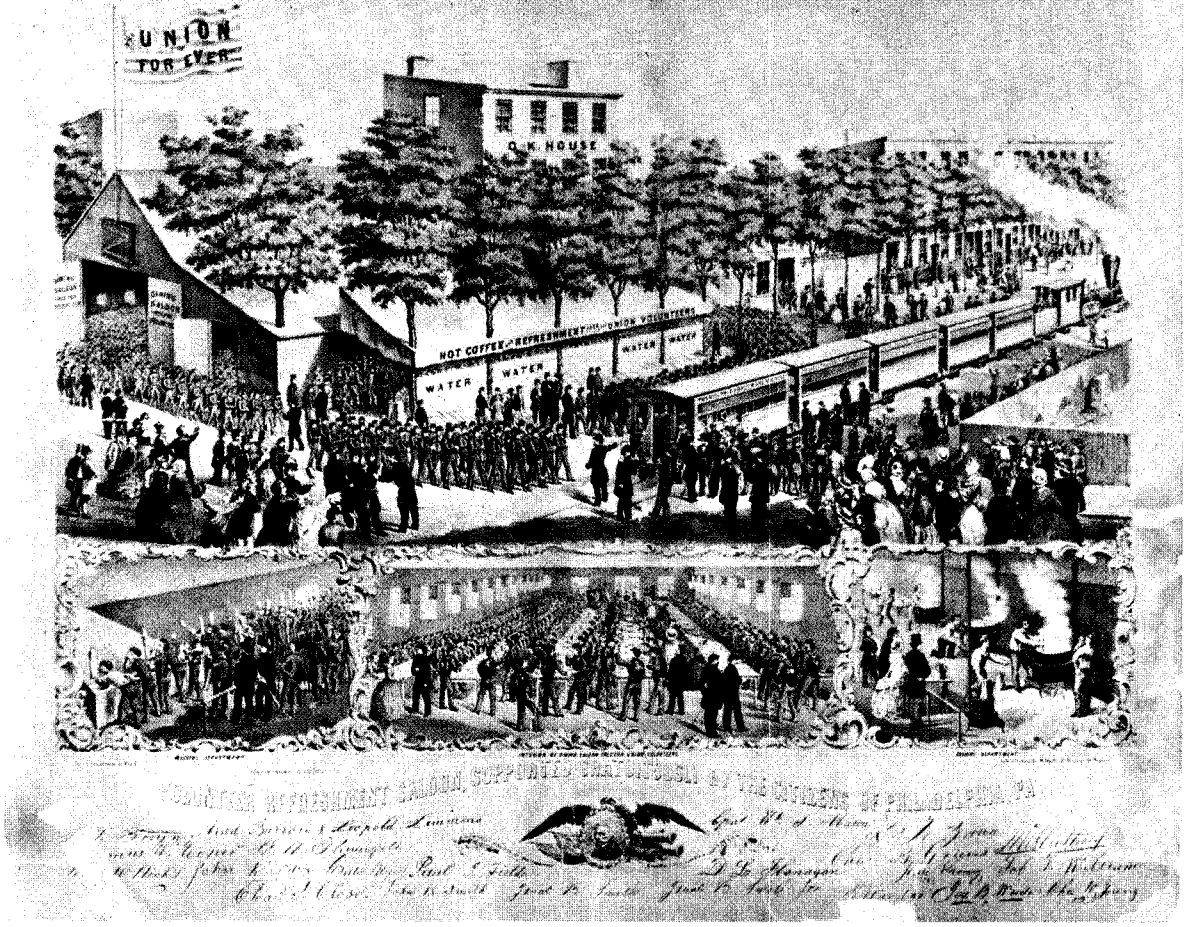
The Civil War, with its massive lines of entrenchments, and its hundreds of Engineer troops so active on the field of battle, swirled around the Philadelphia District, but never really touched it, while Washington, a short 109 miles from the confederate capital at Richmond, was ringed by 68 forts and redoubts, and more than twenty miles of entrenchments. Although Philadelphia was continually fluttered by the daily battle reports and almost panicked by an influx of refugees from Gettysburg in 1863, there was no repetition of the 1812 entrenchment policy. To defend against a threatened advance on the city of Confederate forces, in June 1863 a Committee of Defense was authorized by City Councils to establish a number of redoubts commanding the principal approaches. Their locations were to be determined by officers of the United States Coast Survey and placed on the south side of Chestnut Street, east of the junction of Darby road; on the east side of the Schuylkill River, near the U.S. Arsenal; on the west side of the Schuylkill River, below Gray's Ferry Bridge; at the east end of Girard avenue bridge; at Hestonville, near Lancaster Avenue, and on School House Lane, near Ridge road.

The total cost of these defenses, as shown by the records of the City Controller, was $51,537.37. The largest work, located at the falls of the Schuylkill and known as "Fort Dana," was created by the gas-works force, and cost only $3,559.47.

However, no guns were ever mounted, the danger having ended with the battle of Gettysburg. Several of the redoubts remained for a number of years after the war, as reminders of the strenuous, and to some ridiculous, labors of an excited public.



Soldiers funneled through the city, with most engineer officers accepting field commands. Forts Mifflin and Delaware were converted to military prisons, Mifflin's casemated dungeons housing Moseby's guerillas among others, in dank subterranean cells with six foot thick walls and window slits only two and one-half by eighteen inches.[16] Conditions



Volunteer Refreshment Saloon, Philadelphia. This canteen welcomed the union soldiers, providing them with free hot meals. —*National Archives*

were infinitely worse at Fort Delaware, within whose precincts up to 10,000 prisoners at a time were immured. Periodic rumors that the prisoners would escape and join with northern "*copperheads*" in an attack on the city were groundless.

S. Weir Mitchell, a Union Army surgeon, attested to:

> *...a thousand ill; twelve thousand on an island which should hold four; the general level three feet below low water mark; twenty deaths a day of dysentary and the living have more life on them than in them.*[17]

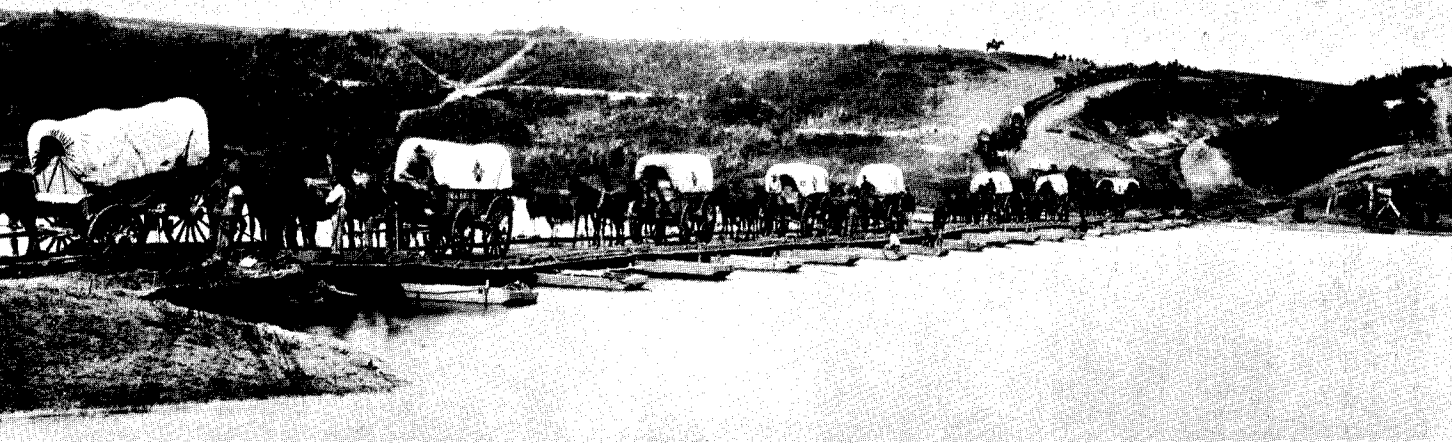
Of the more than 30,000 prisoners who passed through Fort Delaware, 2,700 died while incarcerated there—an even higher rate than at the Southern nightmare prison at Andersonville.

On 2 December 1861, the Philadelphia Board of Trade warned Congress:

> *That the river and bay defenses of Philadelphia are entirely inadequate, and need to be immediately and largely increased, and that it is the duty of the United States government to superintend and effect such increase, at such points as a competent Corps of Engineers may indicate, with the least possible delay.*[18]

However, after the mounting of guns at Forts Delaware and Mifflin, no real action was taken. In the field, military engineers breached and undermined walls; pushed roads across captured terrain; and bridged rivers and forded streams, often with trains of engineer ponton boats—but all far from the Philadelphia area.

In the city, the war had made itself felt. Aroused by the 12 April 1861 firing on Fort Sumter, Philadelphia militia had rushed to a



Wagon Train Crossing Ponton Bridge. Rappahannock River, below Fredericksburg, Va. —*Library of Congress*

Confederate Prisoners at Fort Delaware. —*Free Library of Philadelphia*